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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,934

12/21/2005

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L7725.05107

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03/11/2009

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EXAMINER

PERILLA, JASON M

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

03/11/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,934	Applicant(s) GOLITSCHKE EDLER VON ELBWART ET AL.	
	Examiner JASON M. PERILLA	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-13 are pending in the instant application.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on June 13, 2005, August 25, 2005, and March 25, 2008 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Double Patenting

3. This application would be subject to a provisional obvious type double patenting rejection in view of U.S. Application 10/538842 if it were revived. Currently, U.S. Application 10/538842 is abandoned.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

Art Unit: 2611

N.A. Ugrelidze et al; "Convolutional codes over GF(4) For 4-Ary Distance-Invariant CPFSK Signaling.", Electronics Letters, IEEE Stevenage, GB, vol. 29, no 12, June 10, 1993 ("Ugrelidze") in view of Nafie et al (EP 1170898; "Nafie")

Regarding claim 1, Ugrelidze discloses a method of transmitting data from a transmitter (fig. 1) to a receiver (not shown) of a diversity (i.e. convolutional encoding) communication system comprising the steps of: encoding data received from a signal source to generate Galois field (GF) (col. 1, *Introduction*; lines 1-3) symbols (fig. 1, *u* data input); modifying redundant GF symbols by an arithmetic operation (fig. 1, "convolutional encoder"); mapping (fig. 1, "CPFSK modulator") the GF symbols and the modified redundant GF symbols (fig. 1, output *a* of convolutional encoder) using 4-ary CPFSK as modulation scheme; and transmitting (output of figure 1) the 4-ary CPFSK modulation symbols and the modified redundant 4-ary CPFSK symbols to the receiver. Ugrelidze discloses inputting data given over a GF(4) field into a redundant or convolutional encoder (fig. 1). Once encoded, the GF symbols and redundant GF symbols are mapped via a CPFSK modulator and transmitted. The transmission of the encoded and mapped data is not explicitly shown by Ugrelidze, but its transmission is considered inherent in Ugrelidze's disclosure for utility. Ugrelidze discloses a CPFSK mapper but not a QPSK mapper. However, the use of QPSK mapping is well known in the strictly analogous fields of art as evidenced by Nafie. Nafie discloses, in a strictly analogous diversity (i.e. convolutional encoding) method, using QPSK mapping (col. 2, line 57 - col. 3, line 3) of encoded GF field data (col. 2, line 47). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention

was made that Ugrelidze's CPFSK mapping could be replaced by Nafie's QPSK mapping where it would be considered appropriate because QPSK mapping is notoriously known and well accepted in the art as an exemplary modulation technique.

Regarding claim 2, Ugrelidze in view of Nafie disclose the limitations of claim 1 as applied above. Further, Ugrelidze discloses that the step of modifying redundant GF symbols comprises multiplying an input data symbol sequence with a multiplier (*System description and calculation results*; lines 1-6, "operations of addition and multiplication are carried out").

Regarding claim 3, Ugrelidze in view of Nafie disclose the limitations of claim 2 as applied above. Further, Ugrelidze discloses that the multiplication is dependent on a diversity parameter because Ugrelidze's convolutional encoder creates the "diversity" and its multiplication constructs (see fig. 1) are, as broadly as claimed, considered "diversity parameters".

Regarding claim 4, Ugrelidze in view of Nafie disclose the limitations of claims 1 to 3 as applied above. Further, Ugrelidze discloses that the GF symbols are obtained by an operation over a GF(4) field with four elements (col. 1, *Introduction*; lines 1-3).

Regarding claim 5, Ugrelidze in view of Nafie disclose the limitations of claim 4 as applied above. Further, Ugrelidze discloses that the input GF symbols are converted to GF(4) symbols prior to applying the arithmetic operation (col. 1, *Introduction*; lines 1-3).

Regarding claim 6, Ugrelidze in view of Nafie disclose the limitations of claim 1 as applied above. Further, Ugrelidze discloses that the arithmetic operation is defined by a primitive polynomial (col. 1, *Introduction*; lines 1-3).

Regarding claim 7, Ugrelidze in view of Nafie disclose the limitations of claim 7 as applied above. Further, Ugrelidze discloses that the diversity parameter is changed when data to be transmitted carries the same information that have already been sent to the receiver (fig. 1). The convolutional encoder of Ugrelidze operates with memory (i.e. see the delay line in figure 1). Therefore, the diversity parameters will necessarily change depending upon the information which has already been sent to the receiver as is notoriously understood in the art.

Regarding claim 8, Ugrelidze in view of Nafie disclose the limitations of claim 1 as applied above. Further, Ugrelidze discloses that the redundant modified QPSK symbols are transmitted within the same data packet with the QPSK modulation symbols. According to the structure illustrated in figure 1, the redundant symbols (i.e. those generated via the convolutional encoder) are necessarily transmitted within the same data packet with the QPSK symbols because they are intermingled and dependent upon each other.

Regarding claim 9, Ugrelidze in view of Nafie disclose the limitations of claim 1 as applied above. Further, Ugrelidze discloses that the redundant modified QPSK symbols are transmitted over multiple diversity branches (fig. 1, see multiple branches of the convolutional encoder).

Regarding claim 10, Ugrelidze in view of Nafie disclose the limitations of the claim as applied to claim 1 above.

Regarding claim 11, Ugrelidze in view of Nafie disclose the limitations of the claim 10 as applied above. Further, Ugrelidze in view of Nafie disclose the remaining limitations of the claim as applied to claim 2 above.

Regarding claim 12, Ugrelidze in view of Nafie disclose the limitations of the claim 10 as applied above. Further, Ugrelidze discloses that the multiplier (i.e. convolutional encoder) can be represented by a look-up table according to which the input GF symbols are modified using a diversity parameter (table 1).

Regarding claim 13, Ugrelidze in view of Nafie disclose the limitations of the claim 10 as applied above. Ugrelidze does not disclose that the transmitter is an ARQ transmitter for sending redundancy versions of already sent data symbols having identical information. However, Nafie discloses the use of Ugrelidze's transmitter in an automatic repeat request system (col. 2, lines 15-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made that Ugrelidze's transmitter could be utilized in an ARQ system as suggested by Nafie because the use of GF fields and redundant codes is well known in ARQ systems.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON M. PERILLA whose telephone number is (571)272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason M Perilla/
Primary Examiner, Art Unit 2611
March 2, 2009

/jmp/